

**REMARKS**

Claims 1, 4, 6, 9, and 10 are pending in the application, with claims 1 and 6 in independent form. Independent claims 1 and 6 have been amended to more clearly set forth the novel and non-obvious features of the instant invention. More specifically, independent claims 1 and 6 have been amended to specify that urethane and/or urea bonds are present in the polyurethane foam, support for which can at least be found on page 4, lines 7-10. Claims 1 and 6 have also been amended to specify that the compound (i) has unsaturated functionality, support for which can at least be found on page 4, lines 1-5 and 12-16. Claims 1 and 6 have also been amended to specify that the unsaturated functionality of at least 0.1% by weight of compound (i) based on the weight of the polyurethane foam is either reacted as claimed in 1) or 2) unreacted, support for which can be found in the fact that the compound (i) is included in the composition in an amount of from 0.1 to 20% by weight based on the weight of the polyurethane foam and further based on the fact that the role of the unsaturated functionality present in compound (i) of the instant invention is as defined by 1) and 2) in the claims. Claims 1 and 6 have also been amended to specify that the primary and/or secondary amines are formed from cleavage of a urethane and/or urea bond, support for which can be found on page 4, lines 6-10. Claims 6 and 10 have been amended consistent with the amendments to claims 1 and 6 to specify that unsaturated functionality of at least 0.5% by weight of compound (i) based on the weight of the polyurethane foam is either 1) reacted in the manner claimed or 2) unreacted. Claims 2-3, 5, and 7-8 were previously cancelled. No new claims are presently added, and no new matter has been added through the instant amendments.

Claims 1, 4, 6, and 9 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,114,402 to Smith. Claims 1, 4, 6, and 9 also stand rejected under 35 U.S.C.

§102(b) as being anticipated by U.S. Patent No. 5,668,187 and its equivalent, Japanese Patent Pub. No. JP06336513, both to Asako et al. (hereinafter referred to as “the Asako references”).

In view of the amendments to the instant claims, the Applicants respectfully submit that the instant claims are **not** anticipated by Smith and the Asako references. More specifically, the Applicants respectfully assert that, whereas the Examiner previously made findings that certain elements of the prior claims are necessarily present and, thus, inherent in the teachings of Smith and/or the Asako references, no such findings can presently be made with regard to the instantly amended claims.

As to the interpretation to be given to Independent claims 1 and 6, these claims expressly claim specific amounts of compound (i) that are used to make the polyurethane foams, and these claims further claim that the unsaturated functionality from at least 0.1% by weight of compound (i) based on the weight of the polyurethane foam is either 1) reacted with a primary and/or secondary amine, **or** 2) remains unreacted. Independent claims 1 and 6 are clear that 1) and 2) are exclusive, i.e., that there is no other activity or other possible reaction schemes that involve the unsaturated functionality from compound (i) at least with regard to the unsaturated functionality of at least 0.1% by weight of compound (i) based on the weight of the polyurethane foam. Thus, to be anticipated, a prior art polyurethane composition must account for the amounts of compound (i) claimed in the instant claims **with the unsaturated functionality of 0.1% by weight of compound (i) being 1) reacted with a primary and/or secondary amine or 2) unreacted.** Independent claims 1 and 6 are clear that the two possible outcomes for the unsaturated functionality of at least 0.1% by weight of compound (i) are exclusive, and there is no other activity or other possible reaction schemes that involve the unsaturated functionality from compound (i).

In view of the above, it is clear that Smith and/or the Asako references do not anticipate independent claims 1 or 6 because the unsaturated functionality is present in the polyurethane products disclosed therein for different reasons and is not bound by options 1) or 2) as claimed in claims 1 and 6. Further, the Applicants respectfully submit that residual amounts of hydroxyethyl acrylate (HEA) present in the polyurethane products of Smith and/or the Asako references with unsaturated functionality thereof remaining unreacted **are not necessarily present in an amount of at least 0.1% by weight as claimed for compound (i) in the instant claims.**

With regard to the Examiner's reliance on the inherency standards to reject the instant claims, as the Examiner is aware, the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. See MPEP 2112(IV.) citing *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, **may not be established by probabilities or possibilities.** The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" See MPEP 2112(IV.) citing *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." See MPEP 2112(IV.) citing *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). In determining whether or not the Patentee in Smith and/or the Asako references could have added the subject matter at issue into

the specifications thereof, it is important to recognize that **the rationale behind the inherency tool** is to accommodate situations in which the common knowledge of technologists is not recorded in the reference; that is, where technological facts are known to those in the field of the invention, albeit not known to judges. See MPEP 2131.01(III) citing *Continental Can Co. USA v. Monsanto Co.*, 948 F.2d 1264, 1268.

**A. Rejection of claims 1, 4, 6, 9, and 10 under 35 U.S.C. § 102(e) as Anticipated by Smith**

With regard to Smith, an additive organic compound having an unsaturated group is reacted with isocyanate during production of polyurethane foam to form an isocyanate prepolymer having an unsaturated group. Smith teaches further reaction of the unsaturated group of the additive organic compound with a monomer-containing unsaturated polyester resin composition (see column 2, lines 36-45).

While the Examiner relies upon the teaching of hydroxyethyl acrylate (HEA) in Smith to find the instantly claimed compound (i) in Smith, it is notable that HEA is **only** disclosed as possibly being present in the specific additive organic compound used in Example 6. More specifically, Example 6 makes use of Tone M-100, which is a hydroxy polyester acrylate that is prepared by the polymerization of a caprolactone (i.e.,  $\epsilon$ -caprolactone) with an acrylic compound (i.e., HEA). Smith makes clear that the HEA *may* be present in an amount of **up to 10% by weight** based on the weight of the additive organic compound (see column 8, lines 1-6), **which makes clear that the HEA is merely a residual reactant that may remain after preparation of the main ingredient of the Tone M-100, i.e., the hydroxy polyester acrylate, and that the HEA may be present in amounts well below 10% by weight** based on the total weight of the Tone M-100.

The Tone M-100 *itself* is **only used in an amount of 5 parts based on the isocyanate** (refer to Column 7, line 63, which indicates that Examples 2-4 were repeated. 5 parts of the additive organic compound based on the isocyanate were used for each of those Examples). Further, the isocyanate is used in an amount of 100 parts to 86.7 parts of other components in the “Polyol Side B” (refer to the table in column 5, lines 45-62). As such, **the absolute highest amount of HEA that may be used is 0.26% by weight based on the total weight of all components used to make the polyurethane product of Smith.** In fact, because the HEA may only be present in the Tone M-100 in an amount of **up to 10%**, it is very likely that the actual amount of HEA present in the resulting polyurethane foam is well below 0.26% by weight.

As set forth above, Smith teaches reaction of the unsaturated group of the additive organic compound with a monomer-containing unsaturated resin. Thus, it is clear that at least some of the unsaturated groups of the HEA present in the polyurethane foam of Smith **must be** consumed in the reaction with the monomer-containing unsaturated resin, which falls outside of options 1) and 2) as claimed in the instant independent claims 1 and 6. Thus, **it is clear that Smith does not necessarily teach that HEA having unreacted unsaturated groups is present in the polyurethane products in an amount of at least 0.1% (which would be necessary to inherently anticipate claims 1 and 6), and absolutely does not teach that HEA having unreacted unsaturated groups is present in the polyurethane products in an amount of at least 0.5% (which would be necessary to inherently anticipate claims 4 and 10).** Stated differently, one of skill in the art would not recognize the polyurethane foams taught by Smith as having HEA present in the polyurethane foams in the amounts instantly claimed **and** with the unsaturated functionality

of at least 0.1% of the HEA based on the total weight of the polyurethane foam only meeting options 1) or 2) as instantly claimed.

For these reasons, the Applicants respectfully submit that the inherent anticipation rejections relying upon Smith are overcome and must be withdrawn.

**B. Rejection of claims 1, 4, 6, 9, and 10 under 35 U.S.C. § 102(b) as Anticipated by the Asako References**

With regard to the Asako references, these references teach use, as a blowing agent, of an aqueous polymer emulsion comprising a polymer of ethylenically unsaturated monomers in the preparation of polyurethane foam. While the polymer is a polymer of unsaturated monomers, those of skill in the art readily appreciate that the polymer resulting from polymerization of unsaturated monomers **no longer includes unsaturation**. Rather, the unsaturation is consumed during formation of the polymer. It is apparent that the Examiner has recognized this fact, but is relying on residual amounts of *unreacted* monomer to argue that 2-hydroxypropyl (meth)acrylate (HPMA) is taught by the Asako references to be present in the polyurethane product that is produced with the blowing agent of the Asako references.

Close examination of the Asako references proves that the claimed amounts of compound (i) having unsaturated functionality **are not necessarily present in the polyurethane products taught by the Asako references**. The Asako references teach that the blowing agent can be made through polymerization of an aqueous emulsion of a monomer, in which the monomer may be present in an amount of up to 70% (refer to column 2, lines 13-19). Even after such polymerization of the monomer, **it is a distinct possibility that all monomer may be reacted in the blowing agent or may be flashed off**.

As such, the presence of residual monomers in the blowing agent is not even a necessarily present feature of the blowing agent. Further, the polymer emulsion is only used in an amount of up to 20 parts by weight based on 100 parts by weight of the polyol that is used to form the polyurethane, thereby even further diluting the amount of any residual unsaturated monomers (if any) that would be present in the final polyurethane product. Further still, the polyol is reacted with isocyanate, thereby even further diluting the amount of any residual monomers (if any) that would be present in the final polyurethane product. Finally, **the polymer emulsion is used as a blowing agent, thereby indicating that the emulsion is intended to vaporize and exit the polyurethane product.** Such vaporization will clearly result in most of the emulsion itself leaving the polyurethane product, and lower molecular weight monomers will clearly vaporize prior to vaporization of higher molecular weight polymers. The sum of each of these facts clearly establishes that residual HEA monomer is **not** necessarily present in the final polyurethane product in the amounts claimed for compound (i) in the instant claims (if there is any HEA monomer left at all), and one of skill in the art would not recognize that the polyurethane foams taught by the Asako references as having HEA present in the polyurethane foams in the amounts instantly claimed **and** with the unsaturated functionality of the HEA only meeting options 1) or 2) as instantly claimed. **At the very least**, the amount ranges claimed in claims 4 and 10 cannot be deemed as inherently anticipated by the teachings of the Asako references.

For these reasons, the Applicants respectfully submit that the inherent anticipation rejections relying upon the Asako references are overcome and must be withdrawn.

In view of the foregoing, the Applicants respectfully assert that the present claims are both novel and non-obvious in view of the prior art relied upon by the Examiner. As such, the Applicants respectfully submit that the claims are now in condition for allowance and respectfully request such allowance.

This Amendment is filed with the appropriate fee for a Request for Continued Examination and payment for a 3-month extension of time. Thus, it is believed that no further fees are presently due. However, the Commissioner is authorized to charge the Deposit Account No. 08-2789, in the name of Howard & Howard Attorneys, P.C., for any fees or credit the account for any overpayment.

Respectfully submitted,

**HOWARD & HOWARD ATTORNEYS**

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Date

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